

Appl. No.: 10/823,288
Attorney Docket No.: SAR-14916A (18703-492)
Amdt. dated May 8, 2006
Reply to Office Action of February 6, 2006

REMARKS

Upon entry of this amendment, claims 1-21 will be pending in the present application. Claims 1, 2 and 9-21 have been amended to conform the claim to more acceptable claim language, to correct the dependency of the claim and/or to correct the numbering of the claim. No new matter has been added.

I. Abstract

The Office reminds the Applicants of the proper form for an abstract of the disclosure. Although the previous abstract was a narrative within the acceptable word limit, did not use the terms "means" and "said" or such phrases as "[t]he disclosure concerns," did not repeat information provided by the title, and sufficiently described the present invention, Applicants amended the abstract to assist in its clarity. Accordingly, Applicants respectfully request that the previous abstract be replaced with the replacement abstract provided on page 9.

II. Claims 1, 4-6 Are Definite

Claims 1 and 4-6 have been rejected under 35 U.S.C. § 112(2) as allegedly being indefinite. Applicants traverse the rejection and respectfully request reconsideration thereof.

The Office alleges that Claim 1 is indefinite because no value is provided for "y", and thus, allegedly, "[i]t is unclear as to what y is in order to obtain luminescent emission."

To not be indefinite under 35 U.S.C. § 112(2), an Applicant must particularly point out and distinctly claim the subject matter that the Applicant regards as his invention. Applicants submit that Applicants have particularly pointed out and distinctly claimed Applicants' invention with regards to Claim 1. For example, in Claim 1, Applicants have particularly pointed out and distinctly claimed that which is "y," namely - "the value defining sufficient Eu²⁺ (europium) to provide luminescent emission." That is to say, "y" is a value that defines an amount of Eu²⁺ that provides luminescent

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Thus, it is clear what "y" is in order to obtain luminescent emission - an amount of Eu²⁺ that provides luminescent emission.

Further, an Applicant is not required to define a term, such as a variable like "y," with a numerical value. As long as the term is defined so as to particularly point to and distinctly claim the subject matter the Applicant deems is his invention, the term is not indefinite. Similarly, if the term is defined so that one skilled in the art can practice the invention, the claim is not indefinite. With "y" of Claim 1 of the present invention as defined, one skilled in the art would be able to practice the invention because europium is a well known phosphor activator in the phosphor art, and thus, one skilled in the art would be able to use an amount of EU²⁺ that provides luminescent emission. Moreover, based on further practical teaching as described in the specification at, for example, paragraph [24], box 2a (where the amount of dopant (i.e., "y") is in the range of 1 to 4% of the stoichiometric amount of Sr_{1-x}Ca_xGa₂S₄:yEu²⁺ (component Ia) or paragraph [26] (where the amount of europium, "y", is e.g., 1 to 6 mol %), "[i]t is []clear as to what y is in order to obtain luminescent emission." Consequently, claim 1 is not indefinite.

The Office further alleges that Claims 4-6 are indefinite apparently for depending from allegedly indefinite Claim 1. However, because Claim 1 is particularly pointed out and distinctly claimed, as discussed above, and thus, not indefinite, Claims 4-6, which depend from Claim 1, are not indefinite.

Applicants, therefore, respectfully request that the § 112(2) rejection be reversed.

III. Claims Are Novel

Claims 1-21 [20] have been rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by U.S. Patent No. 6,695,982 ("the '982 patent"). Applicants traverse the rejection, and respectfully request it be reversed.

For a claimed invention to be anticipated, a single reference must teach every aspect of the claimed invention either explicitly or impliedly. The Office alleges that the '982 patent teaches a phosphor having a formula of (AS)^w(B₂S₃):tD²⁺, where A can be Ca and/or Sr, B can be Ga, D can be europium, w is 1.02-1.2 and t is 0.01-0.1 and that the

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phosphor can be rewritten as $\text{Sr}_{1-x}\text{Ca}_x\text{Ga}_2\text{S}_4:\text{yEu}^{+2}\cdot0.02\text{-}0.2\text{Ga}_2\text{S}_3$, where x is 0-1 and y is 0.01-0.1. See page 3, paragraph 3 of Office Action dated 2/6/06. However, the Office respectfully is mistaken.

The '982 patent teaches a process for producing a phosphor of the formula $(\text{AS})\text{-w}(\text{B}_2\text{S}_3)$ where:

A is at least one divalent cation selected from Mg, Ca, or Sr;

B is at least one trivalent cation selected from Al, Ga or Y; and

either $0.8 \leq w \leq 0.98$ or $1.02 \leq w \leq 1.2$ (see e.g., Abstract and column 2, lines 13-19); or where:

A is $\text{Mg}_a\text{Ca}_b\text{Sr}_c\text{Eu}$, with $a+b+c=1$, where $0.4 \leq a \leq 0.7$, $0.1 \leq b \leq 0.4$, $0 \leq c \leq 0.4$ and $0.01 \leq a \leq 0.1$;

B is $(\text{Ga}_x\text{Al}_y\text{Y}_z)_2$ with $x+y+z=1$, where $0.9 \leq x \leq 1$, $0 \leq y \leq 0.1$ and $0 \leq z \leq 0.1$; and either $0.8 \leq w \leq 0.98$ or $1.02 \leq w \leq 1.2$ (see e.g., column 2, lines 13). Thus, the '982 patent teaches that component A of the '982 phosphor is a divalent cation. Consequently, the phosphor of the '982 patent cannot have a component A containing gallium (Ga), a trivalent cation, as asserted by the Office (in stating that the phosphor of the '982 patent can be rewritten as $\text{Sr}_{1-x}\text{Ca}_x\text{Ga}_2\text{S}_4:\text{yEu}^{+2}\cdot0.02\text{-}0.2\text{Ga}_2\text{S}_3$).

In contrast, Claim 1 of the present invention recites a trivalent cation, such as gallium (Ga), in its component Ia (see, e.g., line 1 of paragraph [18] of the present specification), which equates to component A of the phosphor of the '982 patent. In other words, the first component (Ia) of the phosphor of Claim 1 of the present invention contains a trivalent cation; whereas the first component (A) of the phosphor of the '982 patent contains a divalent cation and not a trivalent cation. Consequently, the '982 patent does not teach the phosphor of present Claim 1, and thus, does not teach every aspect of Claim 1. Claim 1, therefore, is not anticipated by the '982 patent.

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Claims 2-8, which have been rejected over the '982 patent under § 102(e), are patentably distinguishable over the '982 patent because of their dependency from Claim 1 and the foregoing reasons.

Claims 9-21, which the Office has rejected in view of the '982 patent under § 102(e), also are patentably distinguishable over the '982 patent. First, because the '982 patent does not teach the phosphor of the present invention, as discussed previously, it fails to teach each and every element of the method of making the phosphor of the present invention, as recited in Claim 9. Consequently, the '982 patent does not anticipate Claim 9. Second, because of their dependency from Claim 9 and the foregoing reasons, Claims 10-21 are not anticipated by the '982 patent.

For the foregoing reasons, Claims 1-21 are novel.

Applicants respectfully submit that the instant application is in condition for allowance. An early Notice of Allowance is earnestly solicited. Applicants invite the Office to contact the undersigned to discuss any still outstanding matters.

Respectfully submitted,

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